DOCUMENT RESUME

ED 079 330 TM 002 928

AUTHOR	Parsons, Jane S.
TITLE	Assessment of Anxiety About Teaching Using the Teaching Anxiety Scale: Manual and Research Report.
INSTITUTION	Texas Univ., Austin. Research and Development Center for Teacher Education.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Research and Development Centers Branch.
PUB DATE	73
CONTRACT	OEC-6-10-108
NOTE	61p.; Paper presented at Annual Meeting of American Educational Research Association (New Orleans, Louisiana, February 25-March 1, 1973)
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Anxiety; *Measurement Instruments; Psychometrics; *Rating Scales; Speeches; Statistical Data; *Student Teachers; Teacher Behavior; *Teacher Evaluation; Test Reliability; Test Results; Test Validity
IDENTIFIERS	TCHAS; *Teaching Anxiety Scale

ABSTRACT

The Teaching Anxiety Scale (TCHAS) is an easily administered, machine scorable, self-report instrument designed to measure situation specific (teaching) anxiety. The single factor structure, high stability (.95) and internal consistency (.87-.94), and manner used for controlling acquiescent set are discussed. The TCHAS correlates significantly and positively with other measures of anxiety, but .76-.86 of what it measures reliably is unique. TCHAS scores discriminated significantly between groups of preservice teachers rated most and least anxious about teaching. TCHAS scores decreased significantly over two to four months of professional preservice education, though MAS scores obtained concurrently remained unchanged. (For related documents, see TM 002 929, 930.) (Author)

ED 079330

TM 002 929
TM 002 929
TM 002 932

ASSESSMENT OF ANXIETY ABOUT TEACHING USING THE TEACHING ANXIETY SCALE: MANUAL AND RESEARCH REPORT

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1973

Paper Presented at the 1973 Annual Meetings of the American Educational Research Association: The research discussed herein was supported in part by the U. S. Office of Education Contract OE 6-10-108 and the Research and Development Center for Teacher Education, R. F. Peck and O. H. Bown, Co-Directors.

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This manual for the Teaching Anxiety Scale supersedes all previous incomplete versions that may be in existance.

JSP
Feb. 1973

ACKNOWLEDGMENTS

The author wishes to extend special thanks to Steven J. Bush, Carol S. Case, Robert F. Peck, Lester R. Steig, Donald B. Witzke, and Mary Jane Woods for their assistance in collecting and processing the data presented for the first time in this manual. The following investigators are gratefully acknowledged for their contributions to the research reported here: Gary D. Borich, Gail G. Brown, James A. Dunn, Frances F. Fuller, Ernest R. Hilgard, Fred J. McDonald, Joan Seiber Suppes, and Donald J. Veldman.

The author is indebted to the hundreds of preservice and inservice teacher subjects and to the 1965-66 and 1966-67 doctoral student teaching supervisors in the Stanford University intern teacher program for their generous cooperation in this endeavor. She wishes also to express appreciation to Edmund T. Emmer for permission to print his unpublished Teaching Anxiety Scale distribution statistics in this manual.

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I. DESCRIPTION OF THE TEACHING ANXIETY SCALE (TCHAS)

Considerable evidence exists that anxiety can impair performance in a variety of tasks. It is suspected that this evidence extends to impairment of teaching performance as well. Several studies indicate that situation-specific measures of anxiety may be better predictors of specific behaviors than are general anxiety measures (2, 18, 22, 27, 31). On the basis of this information, the Teaching Anxiety Scale (TCHAS) was designed to provide a tool for measuring anxiety specific to the task of teaching.

The Teaching Anxiety Scale (TCHAS) was developed initially at Stanford University in two equivalent forms (TCHAS(1)-25 and TCHAS(2)-25) for use with preservice, intern teachers. This work was financed in part by the Stanford Center for Research and Development in Teaching under U.S. Office of Education (Contract No. 6-18-078). More recently, several slightly altered versions of the TCHAS (TCHAS(1)-24, TCHAS(1)-28, and TCHAS(1)-29) were made available for use with inservice teachers. The development of these was financed in part by The University of Texas Research and Development Center for Teacher Education, under U.S. Office of Education Contract No. 6-10-108.

In the following pages the Teaching Anxiety Scale will be described in detail and will be discussed in terms of distribution statistics, scoring procedures, susceptibility to response bias, reliability, validity, and suggested use.

The TCHAS contains a variety of self-report statements about teacher reactions to teaching. These reactions are of two general kinds: first, emotional responses to a variety of different situations related to teaching, and, second, attitudes toward teaching as a profession. All the statements are presented with a 1-5 choice option format, from low agreement with the item (1 = "never") to high agreement with the item (5 = "always"). Other middle-range options are "infrequently," "occasionally," and "frequently," 2-4, respectively.

Approximately half of the items are phrased negatively (in terms of admission of anxiety); for example: "I'm worried whether I can be a good teacher." A high degree of agreement with this negatively phrased item is scored "high-anxious." The other items are positively phrased, for example, "I feel sure I can be a good teacher." A high degree of agreement with positively phrased items is scored "low-anxious."

Initially the TCHAS appeared in two equivalent forms (TCHAS(1)-25 and TCHAS(2)-25) which were developed for use in the study of pre-service teachers (15). A discussion of the benefits derived from using equivalent forms of the TCHAS can be found in Appendix I. Each of the items in the TCHAS(1)-25 corresponds to a specific item in the TCHAS(2)-25. If the item is phrased positively in one form, it is phrased negatively in the other form and vice versa. See the previous paragraph for an illustration. The ordering of the items in the two forms (TCHAS(1)-25 and TCHAS(2)-25) is not the same. Appendix V shows the location of item pairs in these two forms.

An attempt to increase the appropriateness of the TCHAS content for the study of inservice teachers resulted in the addition of three slightly altered versions: TCHAS(1)-24, which is TCHAS(1)-25 minus item 16; TCHAS(1)-28, which is TCHAS(1)-24 plus four items; and TCHAS(1)-29, which is a composite of all items in TCHAS(1)-25 and TCHAS(1)-28. A more detailed description of the several TCHAS forms can be found in Appendix II. The author presently uses only the TCHAS(1)-29, since it has the advantage of being scored in a number of ways, depending upon the kind of teachers being studied. The correlations among the four scorings for the TCHAS(1)-29 for preservice teachers ranged from .998 to ,98 for one group of 30 student teachers and from .98 to .996 for a second group of 36 preservice teachers. See Appendix XII for greater detail. These correlations indicate that, for the study of preservice teachers, it makes little difference which form of the TCHAS is used.

Lack of data prohibits the making of an analogous statement about inservice teachers.

It is important to note here that the use of the Teaching Anxiety Scale should be restricted to research questions at this stage in its development. It would be inappropriately used as a basis for selection, diagnosis or evaluation of individual teachers.

II. TEACHING ANXIETY SCALE DISTRIBUTION STATISTICS

The TCHAS distribution statistics are presented in two tables. Table I contains the information for preservice teachers; Table II contains analogous information for inservice teachers.

Table I

Teaching Anxiety Scale (TCHAS) Distribution Statistics for Preservice Teachers

	Mean	Sigma	N	Sample
TCHAS(1)-25, June 1966	62.62	13.42	55	Group A Graduate Preservice Intern Teachers (secondary)
TCHAS(2)-25, June 1966	60.20	13.46	55	
TCHAS(1)-25, August 1966	56.78	12.26	55	
TCHAS(2)-25, August 1966	54.74	12.77	55	
TCHAS(1)-25, February 1970	63.38	12.01	71	Group D Undergraduate Preservice Teachers (secondary)
TCHAS(1)-25, May 1970	58.14	12.32	64	
TCHAS(1)-25, July 16, 1971	56.00	12.66	36	Group E Undergraduate Preservice Teachers (secondary)
TCHAS(1)-25, Aug. 21, 1971	55.28	13.84	14	
TCHAS(1)-25, Oct. 12, 1971	55.46	12.74	30	Group F Undergraduate Preservice Student Teachers (elementary)
TCHAS(1)-25, Oct. 13-15, 1971	52.20	11.80	30	
TCHAS(1)-25, Dec. 8, 1971	46.40	10.14	20	
TCHAS(1)-24, July 16, 1971	53.61	11.78	36	Group E Undergraduate Preservice Teachers (secondary)
TCHAS(1)-24, Aug. 21, 1971	52.64	13.62	14	
TCHAS(1)-24, Oct.12, 1971	53.63	12.19	30	Group F Undergraduate Preservice Student Teachers (elementary)
TCHAS(1)-24, Oct. 13-15, 1971	50.36	11.36	30	
TCHAS(1)-24, Dec. 8, 1971	44.90	9.74	20	
TCHAS(1)-28, July 16, 1971	65.19	13.32	36	Group E Undergraduate Preservice Teachers (secondary)
TCHAS(1)-28, Aug. 21, 1971	63.00	15.38	14	

	Mean	Sigma	N	Sample
TCHAS(1)-28, Oct. 12, 1971	63.60	14.09	30	Group F Undergraduate Preservice Student Teachers (elementary)
TCHAS(1)-28, Oct. 13-15, 1971	60.06	13.28	30	
TCHAS(1)-28, Dec. 8, 1971	53.00	10.88	20	
TCHAS(1)-29, July 16, 1971	67.58	14.18	36	Group E Undergraduate Preservice Teachers (secondary)
TCHAS(1)-29, Aug. 21, 1971	65.64	15.61	14	
TCHAS(1)-29, Oct. 12, 1971	65.43	14.63	30	Group F Undergraduate Preservice Student Teachers (elementary)
TCHAS(1)-29, Oct. 13-15, 1971	61.90	13.71	30	
TCHAS(1)-29, Dec. 8, 1971	54.5	11.32	20	

Note: Sigma = $\sqrt{\frac{\Sigma x^2}{N}}$

See Appendix XIII for additional information about the samples.

Table II

Teaching Anxiety Scale (TCHAS) Distribution Statistics for Inservice Teachers

	Mean	Sigma	N	Sample
TCHAS(1)-24, May 1969	53.74	14.30	23	Group C Inservice Teachers (elementary and junior high)
TCHAS(1)-25, August 1967	44.41	18.19	384	Group B Inservice Teachers (elementary and secondary)
TCHAS(1)-25, August 1967	34.63	22.32	325	
TCHAS(1)-25, May 1969 (estimated*)	55.95	14.90	23	Group C Inservice Teachers (elementary and junior high)
TCHAS(1)-28, May 1969	63.61	16.08	23	Group C Inservice Teachers (elementary and junior high)

Note: Sigma = $\sqrt{\frac{\Sigma x^2}{N}}$

See Appendix XIII for additional information about the samples

*The mean and sigma for the Texas group of inservice teachers were estimated

	Mean	Sigma	N	Sample
TCHAS(1)-28, Oct. 12, 1971	63.60	14.09	30	Group F Undergraduate Preservice Student Teachers (elementary)
TCHAS(1)-28, Oct. 13-15, 1971	60.06	13.28	30	
TCHAS(1)-28, Dec. 8, 1971	53.00	10.88	20	
TCHAS(1)-29, July 16, 1971	67.58	14.18	36	Group E Undergraduate Preservice Teachers (secondary)
TCHAS(1)-29, Aug. 21, 1971	65.64	15.61	14	
TCHAS(1)-29, Oct. 12, 1971	65.43	14.63	30	Group F Undergraduate Preservice Student Teachers (elementary)
TCHAS(1)-29, Oct. 13-15, 1971	61.90	13.71	30	
TCHAS(1)-29, Dec. 8, 1971	54.50	11.32	20	

Note: Sigma = $\sqrt{\frac{\Sigma x^2}{N}}$

See Appendix XIII for additional information about the samples.

III. TEACHING ANXIETY SCALE - SCORING PROCEDURES

Since, on all forms of the TCHAS, approximately half of the items are phrased positively and half are phrased negatively (and a high degree of agreement with one type indicates high anxiety, while agreement with the other indicates the opposite), reverse scoring of positively phrased item responses is used in order to produce item scores with consistent meaning. After reverse scoring has been performed, a high score on all items reflects a high degree of admitted anxiety.

Reverse-scoring is accomplished by the following procedure: "1's" are rescored "5's"; "2's" are rescored "4's"; "3's" remain the same; "4's" are rescored "2's"; and "5's" are rescored "1's". The total TCHAS scale score is then calculated by summing the item scores. For the various forms of the TCHAS, an asterisk (*) is placed beside items that must be reverse-scored. See Appendices III and IV.

IV. RESPONSE BIAS AND THE TEACHING ANXIETY SCALE

The fact that a great many personality instruments correlate highly (11), though they purport to measure different personality attributes, has lead numerous psychologists to study possible artifacts which might spuriously inflate these inter-measure correlations. Their investigations have centered attention upon previously unsuspected similarities among subjects, similarities among measures, and some combination of these two. Such similarities have been referred to as "response bias." One source of response bias that has been hypothesized and studied is "acquiescent set" (17). Acquiescent set refers to the tendency of subjects to agree to the same degree with all statements on self-report measures, regardless of item content. One way to overcome the possible effects of acquiescent set is to reverse score approximately half of the items on a given measure, so that the same degree of agreement or disagreement, per se, does not systematically influence personality attribute scores. As already discussed, in all forms of the TCHAS, approximately half the items are worded so that they require reverse-scoring. Thus, any systematic response bias due to the tendency to agree or disagree will tend to be cancelled out in the total TCHAS score.

A second source of response bias which has been hypothesized and studied by psychologists is "social desirability" (11). Social desirability, or SD, refers to the tendency on the part of subjects to characterize themselves consistently in socially desirable or socially undesirable terms.

The presence of acquiescent set and social desirability have very different implications for the TCHAS. It is desirable to eliminate the effects of acquiescent set on the TCHAS because there appears to be no logical connection between acquiescent set and anxiety. That is, being high or low in anxiety does not imply anything about the degree to which a person responds acquiescently, and vice versa. On the contrary, characterizing oneself as high in anxiety or low in anxiety does imply something about the characterization of oneself in socially desirable or undesirable terms. American culture views anxiety as a negative attribute. Thus, a scale purporting to measure anxiety which is entirely free of social desirability is probably not measuring anxiety as it is commonly understood. Therefore, instead of trying to construct a teaching anxiety measure that is free from social desirability, the TCHAS was

simply studied in relation to social desirability. In order to do this, social desirability scores were obtained for all subjects following the procedure explained in Appendix VI. These scores were used, not to determine whether the TCHAS was influenced by social desirability, but rather to determine the extent to which the TCHAS was influenced.

As was expected, the twelve correlations between the TCHAS(1,2)-25 and social desirability, ranging from -.17 to -.47, were consistently negative. However, the fact that only two correlations reached statistical significance indicates that the degree of SD in the TCHAS(1,2)-25 is probably as low as can be expected. A complete table of these correlations is presented in Appendix VI.

V. TEACHING ANXIETY SCALE RELIABILITY

Internal Consistency

The alpha coefficients of internal consistency for the TCHAS, which can be thought of as the average of all possible split half reliabilities (6) are found in Table III. All coefficients indicate that the internal consistency of the TCHAS is high.

Table III

Coefficients of Internal Consistency (Alphas) for the Teaching Anxiety Scale (TCHAS)

TCHAS Version	Admin. Date	Alpha	N	Sample
TCHAS(1)-25,	July 16, 1971	.90	36	Group E Undergraduate Preservice Teachers (secondary)
TCHAS(1)-25,	August 21, 1971	.94	14	
TCHAS(1)-25,	October 12, 1971	.92	30	Group F Undergraduate Preservice Student Teachers (elementary)
TCHAS(1)-25,	October 13-15, 1971	.92	30	
TCHAS(1)-25,	December 8, 1971	.91	20	
TCHAS(1)-24,	July 16, 1971	.90	36	Group E Undergraduate Preservice Teachers (secondary)
TCHAS(1)-24,	August 21, 1971	.94	14	
TCHAS(1)-24,	October 12, 1971	.91	30	Group F Undergraduate Preservice Student Teachers (elementary)
TCHAS(1)-24,	October 13-15, 1971	.91	30	
TCHAS(1)-24,	December 8, 1971	.91	20	
TCHAS(1)-25,	June 1966	.92	55	Group A Graduate Preservice Intern Teachers (secondary)
TCHAS(1)-25,	August 1966	.92	55	
TCHAS(1)-25,	June 1966	.92	55	
TCHAS(1)-25,	August 1966	.93	55	
TCHAS(1)-25,	August 1967	.87	279	Group B Inservice Teachers (elementary and secondary)
TCHAS(2)-25,	August 1967	.87	279	

TCHAS Version	Admin. Date	Alpha	N	Sample
TCHAS(1)-25,	Fall, 1969	.88	79	Group D Undergraduate Preservice Teachers (secondary)
TCHAS(1)-28,	1969	.93	23	Group C Inservice Teachers (elementary and junior high)
TCHAS(1)-28,	July 16, 1971	.90	36	Group E Undergraduate Preservice Teachers (secondary)
TCHAS(1)-28,	August 21, 1971	.94	14	
TCHAS(1)-28,	October 12, 1971	.91	30	Group F Undergraduate Preservice Teachers (elementary)
TCHAS(1)-28,	October 13-15, 1971	.92	30	
TCHAS(1)-28,	December 8, 1971	.90	20	
TCHAS(1)-29,	July 16, 1971	.90	36	Group E Undergraduate Preservice Teachers (secondary)
TCHAS(1)-29,	August 21, 1971	.94	14	
TCHAS(1)-29,	July 16, 1971	.92	30	Group F Undergraduate Preservice Student Teachers (elementary)
TCHAS(1)-29,	October 13-15, 1971	.92	30	
TCHAS(1)-29,	December 8, 1971	.90	20	

Note: See Appendix XIII for additional sample information.

Stability

The stability of a measure is generally represented by a Pearson Product Moment test-retest correlation. The assumption underlying this interpretation is that nothing is expected to occur in the lives of the subjects between the two testings that would change their attitudes toward teaching and, thus, that the attribute being measured by the TCHAS will remain relatively stable. Most of the subjects in Table IV do not meet this criterion. Even a brief period in the life of a preservice teacher who is undergoing initial teaching experiences might be expected to result in idiosyncratic change in his feelings about, and attitudes toward, teaching. Since the assumption underlying the interpretation of test-retest correlations as stability coefficients cannot be met when as much as several weeks intervene in the life of a preservice teacher between testings, most of the correlations in Table IV do not qualify as stability coefficients. For one group, however, the assumption is met. This group of 30 University of Texas undergraduate female students was administered the TCHAS(1)-29 in their supervisory seminars. A second copy in a stamped and addressed envelope was given to each student teacher with the instruction to fill it out the next day and mail it to the researcher. The time of the second administration varied between one and three days after the initial administration. As can be seen in Table IV, the test-retest stability coefficients (all .95) for this group are very high, despite the fact that the two administrations occurred under different conditions.

Table IV

Teaching Anxiety Scale (TCHAS) Test-Retest Information

TCHAS Version	Time between Administrations	Test-Retest Correlations*	N	Sample
TCHAS(1)-24	1-3 days	.95	30	F
TCHAS(1)-25	1-3 days	.95	30	F
TCHAS(1)-28	1-3 days	.95	30	F
TCHAS(1)-29	1-3 days	.95	30	F
TCHAS(1)-24	1 month	.87	14	E
TCHAS(1)-25	1 month	.87	14	E
TCHAS(1)-28	1 month	.81	14	E
TCHAS(1)-29	1 month	.83	14	E
TCHAS(1)-24	2 months	.83	14	F
TCHAS(1)-25	2 months	.84	14	F
TCHAS(1)-28	2 months	.83	14	F
TCHAS(1)-29	2 months	.84	14	F
TCHAS(1)-25	2 months	.61	55	A
TCHAS(2)-25	2 months	.60	55	A
TCHAS(1)-25	4 months	.73	59	D

Note See Appendix XIII for additional sample information

* Pearson Product Moment

VI. VALIDITY

Validation of the TCHAS falls under the rubric "construct validation." Construct validation is a measurement strategy which correlates an hypothesized psychological construct (trait) to related constructs (traits) in an attempt to discover the common and unique components among them. Four assumptions underlie construct validation:

a. The construct does exist.

b. At least some aspect of the construct is measurable.

c. The instrument being used does, in fact, measure some aspect of that construct.

d. The construct as measured by the instrument is related to other variables.

Confirmation of an hypothesized construct lends support to each of these underlying assumptions. Lack of confirmation, however, is much more difficult to interpret. The researcher himself is faced with deciding which, if any, of the assumptions have not been met.

The objective in applying the construct validation strategy to teaching anxiety, as measured by the TCHAS, is to build a nomological network (8) of hypotheses about the relationship of teaching anxiety to a variety of other observable behaviors. The evidence for the construct validity of the TCHAS discussed below is organized into the following categories: component analysis, group differences, internal structure, and change over time.

Component Analysis

Perhaps the most obvious expectation about teaching anxiety is that it should be related to other kinds of anxiety, i.e., both to situation-specific anxiety and to general anxiety. To test this hypothesis, the TCHAS was correlated with two other paper-and-pencil, self-report measures of anxiety. These measures were the Taylor Manifest Anxiety Scale (36) and the Test Anxiety Scale (28). As can be seen in Table V, the TCHAS(1,2)-25 and MAS (administered concurrently) were correlated between .30 and .45 ($p < .05$). The TCHAS(1,2)-25 and the TAS, administered one month apart, were also moderately correlated. These consistently positive and predominantly significant correlations indicate that the TCHAS shares common variance with both the MAS and the TAS.

Table V

Correlations between the Teaching Anxiety Scale and other Self-Report Anxiety Scales

	MAS June 1966	MAS Aug. 1966	TAS July 1966
TCHAS(1)-25, June 1966	.40*	.30*	.25
TCHAS(2)-25, June 1966	.45*	.31*	.28*
TCHAS(1)-25, August 1966	.33*	.31*	.41*
TCHAS(2)-25, August 1966	.31*	.50*	.34*

* $p < .05$. N = 55 (Group A)

It was also hypothesized that anxiety about teaching can be detected by an external human observer. To test this hypothesis, 25 doctoral candidate teaching supervisors completed 19 TCHAS items about each of their graduate student preservice intern teachers. Analogously, each preservice intern teacher completed these items about himself. For example, the teaching supervisors responded to the item: "This intern feels uncomfortable when he speaks before a group," and the preservice intern teacher responded to the item: "I feel uncomfortable when I speak before a group." Eleven of the 19 resulting validity coefficients, which ranged from .24 to .54, were significant ($p < .05$). (See Appendix VII for greater detail.) This evidence suggests that, to at least some degree, the teaching anxiety reported on the Teaching Anxiety Scale by these preservice teachers corresponds to what the teaching supervisors perceived to be teaching anxiety in their preservice intern teachers.

Component validation appears in forms more complex than those discussed above. Interest in two lines of research has increased during the past two decades. The first deals with the study of subcomponents within the component shared by two constructs. The second deals with the component of a construct which is unique with respect to other measured constructs.

Subcomponents within the shared component. Campbell and Fiske (4) suggest a technique that permits the researcher to determine whether his validity coefficients (the correlations between a single trait measured by two or more different methods) are unduly influenced by such peripheral variables as 1) the ability to understand and respond accurately to certain

types of measurement instruments and 2) the tendency to respond to all measures in a socially desirable manner. The presence of the first kind of peripheral variable is indicated in the correlation between two or more different (and preferably unrelated) traits measured by a single method, referred to here as heterotrait-monomethod coefficients. The presence of the second kind of peripheral variable is indicated in the correlation between different traits measured by different methods, referred to as heterotrait-heteromethod coefficients.

The Campbell-Fiske technique requires that the validity coefficient (the monotrait-heteromethod correlation) be higher than either the heterotrait-monomethod coefficients or the heterotrait-heteromethod coefficients. In relationship to the TCHAS(1)-25, this means that the correlation between teaching anxiety measured by the TCHAS(1)-25 and teaching anxiety measured by the ASR (.62) be higher than either the correlation between teaching anxiety measured by TCHAS(1)-25 and general anxiety as measured by the Taylor Manifest Anxiety Scale (.38) or the correlation between teaching anxiety measured by the TCHAS(1)-25 and general anxiety measured by the ASR (.31). As can be seen, the validity of the TCHAS(1)-25 meets the criteria suggested by Campbell and Fiske. A complete description of this procedure as applied to the TCHAS(1)-25 can be found in Appendix VII. (See Appendix X for a copy of the Anxiety Self Report (ASR).)

Unique Components. Cronbach suggests a procedure (7) for determining the size of the component of a measured construct which is unique from other measured constructs. The size of the unique component (which includes both method and trait similarities between a set of two measures) must be high enough to support the existence of a separate trait. As can be seen by the detailed description in Appendix IX, 76% and 86% of what the TCHAS(1)-25 measures is reliable (error-free) and independent of what is measured by the MAS and the TAS, respectively. It is within this unique component that the construct teaching anxiety appears to reside. See, also, page 16 for further information relevant to the component unique to teaching anxiety as measured by the TCHAS(1)-25.

Group Differences. In an earlier study by Parsons (25) "most anxious" and "least anxious" groups of graduate-student, preservice, intern teachers were selected upon the basis of teaching supervisor opinion. Each of 25 supervisors was asked to list the five or fewer preservice teaching interns in the entire program (N = 120) who appeared to be "most anxious about teaching"

and those five or fewer who appeared to be "least anxious about teaching." As hypothesized, the "most anxious" group had a significantly higher TCHAS mean score (77.1) than did the "least anxious" group (62.1). This analysis adds another increment of support to the validity of the TCHAS as a measure of anxiety about teaching.

Table VI

Difference in Teaching Anxiety*for Groups Rated "Most Anxious" and "Least Anxious" about Teaching

Groupings According to Supervisor Ratings	N	Mean	Sigma
"High Anxious"	31	77.1	17.8
"Low Anxious"	49	62.1	17.0
Difference		15.0	

Note: $t = 3.8$
$DF = 78$
$p < .005$

*This 29 item TCHAS version contains only negatively phrased items, 19 of which presently appear in either TCHAS(1)-25 or TCHAS(2)-25, but not in both.

Internal Structure

In studying the initial TCHAS item pool, it appeared that anxiety about teaching might comprise several elements, such as anxiety about being evaluated, anxiety about maintaining discipline, and anxiety about being able to teach effectively. However, the alpha coefficients of internal consistency are high (.87-.93), suggesting that teaching anxiety, as measured by the TCHAS, is a unitary variable. See Table IV.

In order to check further on the internal consistency of the Teaching Anxiety Scale, two factor analyses were run. If the TCHAS is a unitary scale, as the high alphas indicate, then most of the items should load most heavily upon a single factor. When the TCHAS(1)-25 for 503 preservice and inservice teachers (Groups A, D, E, and F) was factor analyzed, 22 of the 25 items loaded most heavily on Factor 1 as was expected. The other three (items 3, 17, and 22) loaded separately most heavily upon three other factors.

Two possible explanations for why these three items evoked responses dissimilar from those evoked by the other 22 items were considered. The first, that preservice teachers might respond to certain items differently (with respect to the majority of items) from the way in which inservice teachers respond to them, was investigated by comparing the TCHAS(1)-25 item--total correlations for preservice teachers (Groups A,D,E,F) with those for inservice teachers (Group B). Significantly different item-total correlations for the two groups would provide support for this explanation. Only the item 22--TCHAS(1)-25 total correlation supported the suggestion that preservice teachers view this item differently from the way in which inservice teachers view it. The item-total correlation for preservice teachers ($N = 199$) was .43; the analogous correlation for inservice teachers ($N = 383$) was .27. The test that these two correlations (based upon independent samples) are the same produced a z score of 2.08, indicating that the two correlations are significantly different from each other ($p < .05$, two-tailed test).

The second possible explanation, that item phrasing may be confusing to subjects refers only to item 22 and can be evaluated by the individual researcher who is interested in using the Teaching Anxiety Scale.

In order to investigate the relationship of items 26-29 to Factor 1, a second factor analysis was performed for all subjects ($N = 65$ preservice teachers) who had taken the TCHAS(1)-29. Since the N is very small for a valid factor analytic study, the results provide only tentative evidence. Each of these four items load most heavily upon factors other than Factor 1. The only pattern, however, is that items 27 and 28 load on a single "other" factor.

In summary, it is suggested that the researcher who is interested in a pure single factor scale of teaching anxiety use a "new" scale--the TCHAS(1)-22, defined as the TCHAS(1)-25 minus items 3, 17, and 22.

Change over Time

Several studies support the hypothesis that, as measured by both the TCHAS(1,2)-25 and the TCHAS(1)-29, anxiety about teaching consistently decreases over the passage of time for preservice teachers. Parsons (25) found that for a group of 17 male and 38 female graduate-student preservice intern teachers (Group A) undergoing their initial summer of teacher preparation (which involved micro-teaching), the mean TCHAS score decreased significantly over a two-month period. Emmer (12) noted significant mean TCHAS

decreases for female preservice elementary teachers at The University of Texas (Group D) over a four-month period, during which they underwent their initial teaching experiences. Similarly, a group of 20 student teachers (Group F) showed a significant decrease in TCHAS scores over two months of student teaching. See Table VII for greater detail.

Table VII

Pre and Post Teaching
Anxiety Scale Mean Scores

	TCHAS Mean (Pre)	N (Pre)	TCHAS Mean (Post)	N (Post)	Interval Between Testings	Sample
TCHAS(1)-25	62.62	55	56.78	55	2 months	A
TCHAS(2)-25	60.20	55	54.74	55	2 months	A
TCHAS(1)-25	63.38	69	58.14	61	4 months	D
TCHAS(1)-25	53.57	14	45.50	14	2 months	F
TCHAS(1)-24	51.86	14	44.21	14	2 months	F
TCHAS(1)-28	60.71	14	51.86	14	2 months	F
TCHAS(1)-29	62.43	14	53.14	14	2 months	F

Note: All pre-post TCHAS mean decreases are significant $p < .05$.

A significant difference in TCHAS(1)-25 mean scores between preservice teachers as a group and inservice teachers as a second group was found. As expected, the mean for combined preservice teachers (Samples A,D,E,and F) is significantly higher than the mean for combined inservice groups (Samples B and C). These means are 60.51 (N = 192) and 45.06 (N = 407), respectively. One fact relevant to the notion (discussed earlier) that the TCHAS has a unique component related specifically to teaching anxiety (as opposed to other kinds of anxiety) is this: although the TCHAS(1)-25 and TCHAS(2)-25 means decrease significantly over training, the Manifest Anxiety Scale means (administered to Group A concurrently with the TCHAS)show no significant change. This evidence lends additional support to the idea that the TCHAS is, indeed, measuring something distinctly different from what other anxiety instruments (the MAS in this case) measure. Specifically, it suggests that the sensitivity of the TCHAS to the effects of intervening teacher training experience is due to this unique component.

VII. SUGGESTED USES OF THE TEACHING ANXIETY SCALE

Formal Use of the TCHAS

Formal use of the Teaching Anxiety Scale should be restricted to research questions at this stage in its development and should not be used as a basis for selection, diagnosis or evaluation of individual teachers. It is suggested that several clusters of research questions appear to be appropriate areas in which to use the TCHAS.

1. The first cluster deals with the relationship of anxiety to the acquisition of skills related to teaching.

    a. Is there a significant relationship between anxiety about teaching and the acquisition of skills related to teaching?

    b. If such a relationship is found to exist, is it linear or curvilinear in nature?

2. The second cluster deals with the possible patterns of item change over time (during teacher training). Even though the TCHAS internal consistency is high, it is still possible that, over subjects, responses to some items may change to a greater degree than do responses to other items. Suppose, for example, (1) that in their initial teaching experiences, most preservice teachers feel anxious about certain types of situations; and (2) that, with experience these anxieties decrease markedly. If this were the case, preservice teacher initiates could be told with assurance that, in view of the fact that most preservice teachers studied felt that way at first, they should not be overly worried over concern about these types of situations. Further, they could be reassured that experience in teaching would probably decrease these worries a great deal just as it did for most of the other preservice teachers studied.

3. The third cluster of research questions centers around deliberate acts of intervention for the purpose of changing the subject in a specific way. Two kinds of criteria for change can be considered. The first kind, in which the effectiveness of the intervention--be it group or individual therapy, desentization, help in the acquisition of teaching-related skills or other--is evaluated on the basis of the pre-post changes (decreases) in measured anxiety. In the second kind, the success of intervention is evaluated <u>not</u> upon changes in anxiety, but upon differential changes in skills. It is predicted by Sieber and others that anxiety level is related to skill acquisition (29,30). For Sieber, the aim of intervention is not to decrease

anxiety per se (though this may occur), but, rather, to enhance the coping skills of all subjects. She has found that greater gains in certain kinds of skill acquisition resulting from intervention will be made by high-anxious than by low-anxious subjects.

Informal Use of the TCHAS

Several informal uses of the TCHAS that are appropriate in its present state of development are suggested below:

1. The study of item frequency distributions from anonymous preservice TCHAS protocols by preservice teachers, instructors and others involved in training teachers.
2. The use of completed or blank TCHAS protocols by preservice teachers and professional staff members working together to pinpoint individual preservice teacher strengths and weaknesses.
3. The use by preservice teachers of TCHAS item score changes as indications of landmarks passed on the road to becoming a teacher.

VIII. SUMMARY

To date, the nomological network of confirmed hypotheses surrounding the teaching anxiety construct, as measured by the TCHAS, is limited, but what is there appears to be logically consistent. Briefly, what is known about the TCHAS as a measure of teaching anxiety follows. It has been shown (1) that the TCHAS is a measure of anxiety; (2) that the TCHAS measures reliably some quality distinct from what either the MAS or TAS measures; (3) that the TCHAS is stable (.95) over short periods of time; (4) that the validity of the TCHAS is not merely an artifact of similarities in method measurement; (5) that preservice teacher responses to the TCHAS are related significantly to the behaviors of these preservice teachers as observed and interpreted by their teaching supervisors; (6) that teaching anxiety as measured by the TCHAS is a unitary variable; and (7) that over several studies, anxiety as measured by the TCHAS consistently decreases as experience in teaching increases.

APPENDIX I

SINGLE VERSUS EQUIVALENT FORMS OF THE TEACHING ANXIETY SCALE

This appendix deals with the question "Are equivalent forms of the TCHAS necessary or even desirable?" Equivalent forms of a single measure are two or more instruments for which the raw scores have the same meaning. Equivalent forms (of a single measure) are useful when an investigator wishes to blot out the effects of memory of the pre-test experience on retest performance. Several kinds of learning experiences might distort retest scores by increasing speed and accuracy. These include (1) general familiarity with item format; (2) recall of information in specific passages; and (3) use of specific techniques, i.e., reading the questions prior to reading the passage about which they are asked, not pausing long in answering questions that seem difficult, guessing. Basically, two types of measures are affected by these practice effects: (1) timed measures; and (2) measures which require answers about specific passages, such as achievement or intelligence tests.

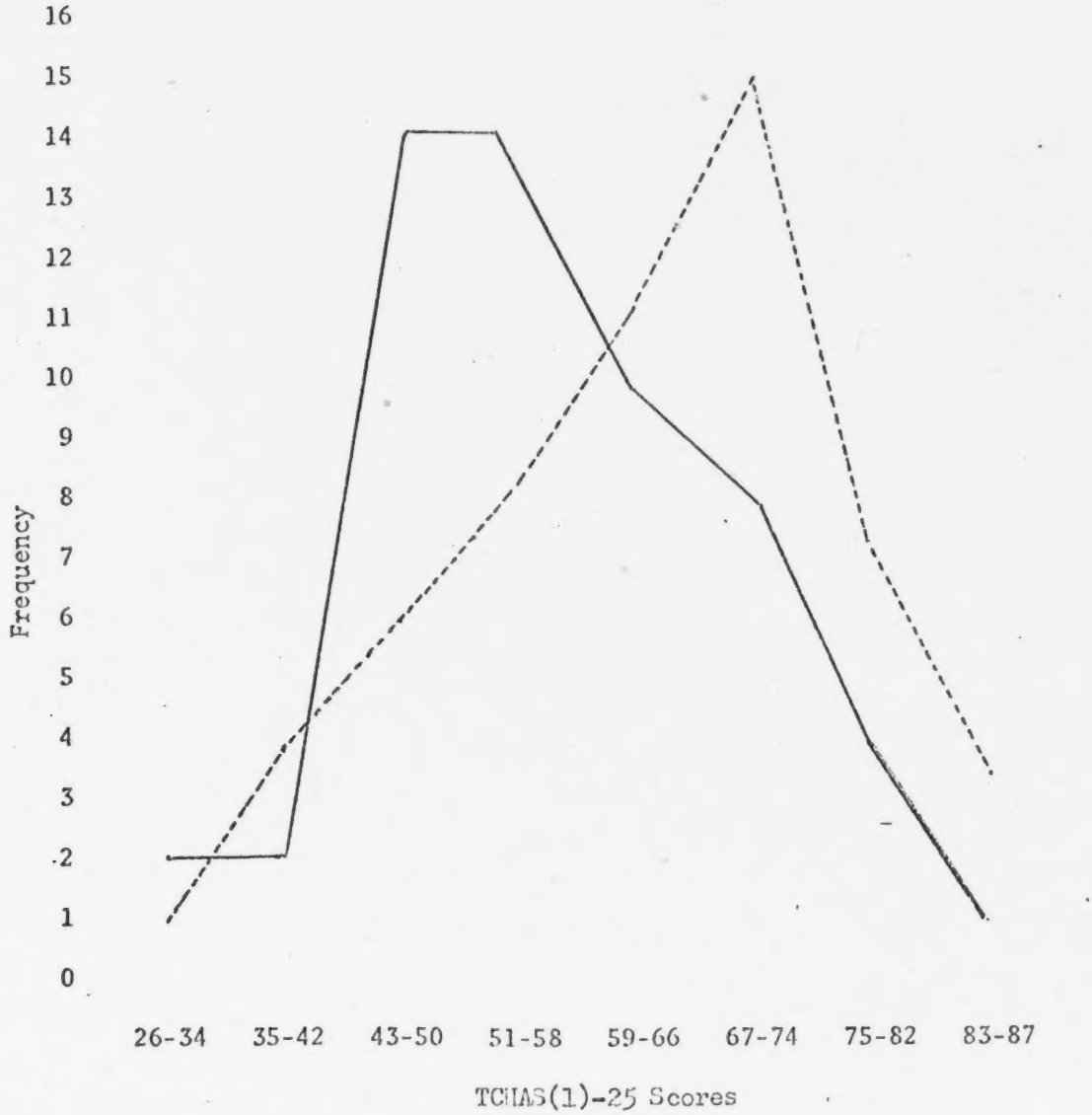
It is suggested here that alternate forms of the TCHAS are neither necessary nor desirable. There is no reason to believe that practice effects and recall of specific content affect TCHAS retest scores in any way that is relevant to the construct being measured. Specifically, increase in speed of responding due to practice should have no effect upon the TCHAS scores because the TCHAS is not a timed measure. Since the format in both forms (TCHAS(1)-25 and TCHAS(2)-25) is identical, increases in speed and accuracy due to familiarity with the question format should be equal, no matter which form was administered first. Similarly, specific item recall does not seem to be an issue, since the two forms contain very similar content. Although subjects do recall item content, the differences in phrasing (which is the primary difference between the two forms) appear to go unnoticed, even when the two forms are administered with little time intervening between them. This notion is supported by one study (26) in which subjects who were asked to complete TCHAS(1)-25 and TCHAS(2)-25 three hours apart expressed annoyance at being asked to complete the "same" questionnaire twice.

In addition to arguments presented in the previous paragraph, there is another reason for caution in using both TCHAS forms in preference to repeating a single form. It is not clear that the two forms are "equivalent" in the strict sense of the word (correlation at or near 1.0). Analysis of one

"ASSESSMENT OF ANXIETY ABOUT TEACHING USING THE TEACHING ANXIETY SCALE: MANUAL AND RESEARCH REPORT" by Jane S. Parsons

Additions (continued)

Additional TCHAS(1)-25 Distribution Information: Frequency Polygon for Group A



June 1966 = - - - - August 1966 = ————

N = 55 Range = 26-87

From Reference (25), Fig. 1, p. 22

JSP 2/24/73

ADDENDUM FOR 1973 AERA PAPER

"ASSESSMENT OF ANXIETY ABOUT TEACHING USING THE TEACHING ANXIETY SCALE: MANUAL AND RESEARCH REPORT" by Jane S. Parsons

Corrections

Page	Change
11, line 6	"criterion" should read "assumption"
20, line 3	"will be" should read "are"
32, Table VIII	"Test Anxiety Questionnaire" and "TAQ" should read "Test Anxiety Scale" and "TAS"
	"p / .05" should read "p < .05"
35, lines 2 and 23	Reference "(2)" should read "(4)"
38, line 1	Reference "(4)" should read "(7)"

Additions

See Reference (25) for the following further information about the Teaching Anxiety Scale for Group A, N=55.

1. TCHAS(1,2)-25 total score distributions (p. 23)
2. TCHAS(1,2)-25 item-total correlations (pp. 24-25)
3. TCHAS(1,2)-25 item means and standard deviations (pp. 19-20)
4. TCHAS(1,2)-25 item two-month test-retest correlations (p. 26)

During the last two years this researcher has become increasingly involved with the work pioneered by Frances F. Fuller on the concerns of teachers (see references 3, 15, and 16). It is suggested here that future users of the Teaching Anxiety Scale might wish to add some items relevant to the three categories (believed to be stages) of concern that have been identified: concerns about self, task, and pupils. The following items have been constructed by Fuller, Parsons and Watkins. These items can be scored using the same response categories as do the anxiety items. However, the meaning of these scores must, of course, be determined in the context of the concerns research cited.

Items 1,4, and 6 represent concerns about self ; items 3,5, and 9 represent concerns about task; and items 2,7, and 8 represent concerns about pupils.

1. I am concerned about standards and regulations set for teachers.
2. I am concerned about adapting myself to the needs of different students.
3. I am concerned about motivating students to study.
4. I am concerned about maintaining the appropriate degree of class control.
5. I am concerned about instilling worthwhile concepts and values.
6. I am concerned about feeling more adequate as a teacher.
7. I am concerned about increasing students' feelings of accomplishment.
8. I am concerned about slow progress of certain pupils.
9. I am concerned about selecting and teaching content well.

study of preservice teaching interns produced a correlation of .93 (N = 134) between the two forms administered 30 minutes apart. However, for a second study, using 297 inservice teachers, a correlation of only .85 was found between the two forms administered three hours apart.

APPENDIX II

TEACHING ANXIETY SCALE DESCRIPTIONS

TCHAS	DEFINITION
TCHAS(1)-29	Appendix III
TCHAS(1)-28	TCHAS(1)-29 (Appendix III) with item #16 omitted (but questions 17-29 retain the same numbers in Appendix VII).
TCHAS(1)-25	Items 1-25 of TCHAS(1)-29 (Appendis III)
TCHAS(2)-25	Appendix IV

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APPENDIX III

THE TEACHING ANXIETY SCALE (TCHAS(1)-29)

Form I

(Prospective) Teacher Questionnaire

Name_____

Date_____

Your answers will be kept strictly confidential. Your professors and teaching supervisors will not have access to this information.

Instructions: Please read each question carefully.
Answer every question, even if it seems vague to you or difficult to answer.
Mark an "x" in only one box for each question. Be sure the "x" falls well within the box and does not extend into another box.

Use the following scale for all questions:

Never Infrequently Occasionally Frequently Always

		Never (1)	Infrequently (2)	Occasionally (3)	Frequently (4)	Always (5)
*1.	I feel calm and collected when I think about holding parent-teacher conferences.	☐	☐	☐	☐	☐
2.	If I have trouble answering a student's question I (will find) find it difficult to concentrate on questions that follow.	☐	☐	☐	☐	☐
3.	I feel uncomfortable when I speak before a group.	☐	☐	☐	☐	☐
*4.	I (would feel) feel calm (if I were) when I am preparing lessons.	☐	☐	☐	☐	☐
5.	I'm worried whether I can be a good teacher.	☐	☐	☐	☐	☐
*6.	I feel sure I will find teaching a satisfying profession.	☐	☐	☐	☐	☐
*7.	I would feel calm and collected if a student's parent observed in my classroom.	☐	☐	☐	☐	☐
†8.	I feel inferior to other preservice teachers in my teacher preparation program.	☐	☐	☐	☐	☐

Form I

Name_____

Date_____

		Never (1)	Infrequently (2)	Occasionally (3)	Frequently (4)	Always (5)
*9.	I feel that students will follow my instructions.	☐	☐	☐	☐	☐
*10.	I feel secure with regard to my ability to keep a class under control.	☐	☐	☐	☐	☐
11.	I'm less happy teaching than I thought I'd be.	☐	☐	☐	☐	☐
12.	I feel nervous when I am being observed by my college supervisor.	☐	☐	☐	☐	☐
*13.	I feel confident about my ability to improvise in the classroom.	☐	☐	☐	☐	☐
*14.	I feel other teachers (will think) think I'm very competent.	☐	☐	☐	☐	☐
15.	I (would feel) feel panicky when a student asks me a question I (couldn't) can't answer.	☐	☐	☐	☐	☐
16.	I feel anxious because I don't know yet whether I really want to be a teacher.	☐	☐	☐	☐	☐
†*17.	I feel better prepared for teaching than other preservice teachers in my teacher preparation program.	☐	☐	☐	☐	☐
18.	Lack of rapport with my students (will be) is one of my biggest worries.	☐	☐	☐	☐	☐
19.	I would feel anxious if the principal informed me he was coming to my class to observe.	☐	☐	☐	☐	☐
*20.	I (would find) find it easy to speak up in the staff room.	☐	☐	☐	☐	☐

Form I.

Name_____

Date_____

		Never (1)	Infrequently (2)	Occasionally (3)	Frequently (4)	Always (5)
21.	I worry about being able to keep the students interested in what I (will teach) teach them.	☐	☐	☐	☐	☐
*22.	I (would find) find it easy to admit to the class that I don't know the answer to a question a student asks.	☐	☐	☐	☐	☐
23.	Deciding how to present information in the classroom (would make) makes me feel uncertain.	☐	☐	☐	☐	☐
*24.	I feel I will have good recall of the things I know when I am in front of the class.	☐	☐	☐	☐	☐
†*25.	I feel I (will be) am as competent in the classroom as other preservice teachers in my teacher preparation program.	☐	☐	☐	☐	☐
26.	I'm concerned about how to use my testing of students as a useful indication of how effectively I'm teaching them.	☐	☐	☐	☐	☐
27.	I'm worried that differences in background between my students and me (will prevent) prevent me from teaching effectively.	☐	☐	☐	☐	☐
*28.	I am certain that my own personal "hang-ups" (will not) do not hinder my teaching effectiveness.	☐	☐	☐	☐	☐
29.	I'm uncertain whether I (will be able to) can tell the difference between really seriously disturbed students and those who are merely "goofing off" in class.	☐	☐	☐	☐	☐

Note: The following information is for the researcher and is not part of the Teaching Anxiety Scale when it is administered to teachers:
*Items that must be reverse scored
†Items that require wording changes when administered to inservice teachers: "preservice teachers in my teacher preparation program" should be changed to "teachers in my school."

APPENDIX IV

THE TEACHING ANXIETY SCALE (TCHAS(2)-25)

Form 11

(Prospective) Teacher Questionnaire

Name_____

Late_____

Your answers will be kept strictly confidential. Your professors and teaching supervisors will not have access to this information.

Instructions: Please read each question carefully.
Answer every question, even if it seems vague to you or difficult to answer.
Mark an "x" in only one box for each question. Be sure the "x" falls well within the box and does not extend into another box.

Use the following scale for all questions:

Never Infrequently Occasionally Frequently Always

		Never (1)	Infrequently (2)	Occasionally (3)	Frequently (4)	Always (5)
1.	I feel uncertain about my ability to improvise in the classroom.	☐	☐	☐	☐	☐
*2.	Even if I have trouble answering a student's question, I (would find) find it easy to concentrate on questions that follow.	☐	☐	☐	☐	☐
3.	I (would feel) feel anxious (if I were) when I am preparing lessons.	☐	☐	☐	☐	☐
4.	I'm afraid students won't follow my instructions.	☐	☐	☐	☐	☐
*5.	I would feel calm if the principal informed me he was coming to my class to observe.	☐	☐	☐	☐	☐
6.	I'm afraid other teachers (will think) think I'm incompetent.	☐	☐	☐	☐	☐
7.	I feel anxious about my ability to keep a class under control.	☐	☐	☐	☐	☐
*8.	I'm happier teaching than I thought I'd be.	☐	☐	☐	☐	☐

Form II

Name_____

Date_____

	(1) Never	(2) Infrequently	(3) Occasionally	(4) Frequently	(5) Always
†9. I feel I (will be) am less competent in the classroom than other preservice teachers in my teacher preparation program.	☐	☐	☐	☐	☐
10. I (would be) am afraid to speak up in the staff room.	☐	☐	☐	☐	☐
11. The thought of holding parent-teacher conferences makes me feel panicky.	☐	☐	☐	☐	☐
*12. I feel certain I really want to be a teacher.	☐	☐	☐	☐	☐
*13. I feel certain about my ability to keep the class interested in what I (will teach) teach them.	☐	☐	☐	☐	☐
14. I (would find) find it difficult to admit that I don't know the answer to a question a student asks.	☐	☐	☐	☐	☐
15. I'm worried whether I will find teaching a satisfying profession.	☐	☐	☐	☐	☐
†*16. I feel that I am as good as other preservice teachers in my teacher preparation program.	☐	☐	☐	☐	☐
*17. I feel at ease when I am being observed by my college supervisor.	☐	☐	☐	☐	☐
18. I'm afraid I will forget everything I know when I get in front of a class.	☐	☐	☐	☐	☐
*19. I feel comfortable when I speak before a group.	☐	☐	☐	☐	☐
*20. I (would feel) feel calm and collected even when a student asks me a question I (couldn't) can't answer.	☐	☐	☐	☐	☐

Form II

Name _____

Date _____

	(1) Never	(2) Infrequently	(3) Occasionally	(4) Frequently	(5) Always
†21. I feel less well prepared for teaching than other preservice-teachers in my teacher preparation program.	☐	☐	☐	☐	☐
*22. I (would be) am able to decide how to present information in the classroom without a feeling of uncertainty.	☐	☐	☐	☐	☐
23. I would feel edgy and nervous if a student's parent observed in my classroom.	☐	☐	☐	☐	☐
*24. I feel sure I can be a good teacher.	☐	☐	☐	☐	☐
*25. Good rapport with my students (will be) is one of my strong points.	☐	☐	☐	☐	☐

Note: The following information is for the researcher and is not part of the Teaching Anxiety Scale when it is administered to teachers:
*Items that must be reverse scored
†Items that require wording changes when administered to inservice teachers: "preservice teachers in my teacher preparation program" should be changed to "teachers in my school."

V. TEACHING ANXIETY SCALE (TCHAS(1,2)-25)
ITEM-PAIR DIRECTORY

Item No. in TCHAS(1)-25	Correlation Between	Item No. in TCHAS(2)-25
1	.61	11
2	.61	2
3	.40	19
4	.61	3
5	.65	24
6	.69	15
7	.83	23
8	.61	16
9	.52	4
10	.78	7
11	.39	8
12	.71	17
13	.72	1
14	.42	6
15	.61	20
16	.73	12
17	.44	21
18	.66	25
19	.64	5
20	.73	10
21	.57	13
22	.31	14
23	.43	22
24	.61	18
25	.64	9
Total	.95	Total

Note: N = 55 (Group A)

VI. SOCIAL DESIRABILITY AND THE TEACHING ANXIETY SCALE

Social Desirability Criteria

Social desirability as related to the TCHAS was studied through the use of alternate scoring procedures for the Manifest Anxiety Scale (MAS) and the Test Anxiety Scale (TAS). Several stages were involved in determining the social desirability scoring criteria. From an examination of the frequency distribution for each item, it was possible to tell in what direction the majority of subjects responded. That direction was considered the direction of social desirability.

In the case of the TAS, which was scored along a continuum of 1 to 8, it was decided to dichotomize scores by arbitrarily grouping together scoring categories 1-4 and 5-8. The MAS was initially scored dichotomously. A response to an item in the socially desirable direction (for both the MAS and the TAS) was rescored "2" and a response in the non-socially desirable direction was rescored "1." The overall social desirability (SD) scores (two for each subject) were computed by summing, separately, SD scores based on MAS items and TAS items.

The Relationship of Social Desirability to the Teaching Anxiety Scale

Of the twelve correlations between the TCHAS(1,2)-25 and SD in Table VIII, only two reached significance: -.47 and -.46. It therefore appears that whatever is substantive about social desirability--that is, a component shared in different scales--is usually not a significant determiner of the TCHAS score.

Table VIII

Correlations Between the TCHAS(1,2)-25 and Social Desirability

	MAS-SD June 1966	MAS-SD August 1966	TAQ-SD July 1966
TCHAS Form I, June 1966	-.23	-.25	-.21
TCHAS Form II, June 1966	-.25	-.26	-.21
TCHAS Form I, August 1966	-.20	-.47*	-.21
TCHAS Form II, August 1966	-.17	-.46*	-.21

Note: N = 55, Group A
* $p < .05$
MAS = Manifest Anxiety Scale
TAQ = Test Anxiety Questionnaire

VII. VALIDITY DATA ON TWELVE ITEMS APPEARING IN THE TEACHING ANXIETY SCALE

The correlations given in this appendix express the degree of agreement between the way 25 teaching supervisors filled out these teaching anxiety items about their preservice teacher supervisees and the way in which the preservice teachers filled out the items about themselves. The phrasing used here is like that responded to by the teaching supervisors, with the preservice phrasing indicated in parentheses, where it differs. In each case, the significance level and the N are given. The N's vary as a result of missing data. The graduate student preservice intern teachers to whom this instrument was administered were referred to as "interns."

Location of Item						
TCHAS(1)-25	TCHAS(2)-25	TCHAS(1)-28	TCHAS(1)-29	Item	Correlation	p	N
11	8*	11	11	This intern is (I am) less happy teaching than he thought he'd be (I thought I would be).	.54	.01	62
23*	22	23*	23*	This intern feels (I feel) anxious about his ability (my ability) to keep a class under control.	.47	.01	93
18	25*	18	18	Lack of rapport with his (my) students is one of this intern's (my) biggest worries.	.45	.01	90
5	24*	5	5	This intern is (I am) worried whether he (I) can be a good teacher.	.45	.01	85
19	5*	19	19	This intern (I) would feel anxious if the principal informed him (me) that he was coming to his (my) class to observe.	.40	.01	75
21	13*	21	21	This intern worries (I worry) about being able to keep the students interested in what he teaches (I teach) them.	.39	.01	91
3	19*	3	3	This intern feels (I feel) uncomfortable when he speaks (I speak) before a group.	.34	.01	64
23	22*	23	23	This intern feels (I feel) uncertain about how to present information in the classroom.	.32	.01	94

Location of Item						
TCHAS(1)-25	TCHAS(2)-25	TCHAS(1)-28	TCHAS(1)-29	Item	Correlation	p	N
15*	20	15*	15*	This intern feels (I feel) panicky when a student asks a question he (I) cannot answer.	.30	.01	81
13*	1*	13	13*	This intern worries (I worry) about having to improvise in the classroom.	.26	.02	84
2	2*	2	2	When this intern has (I have) trouble answering a student's question he finds (I find) it difficult to concentrate on the questions that follow.	.24	.03	85

Note: Starred locations refer to the positively phrased "equivalent" of that item. The degree of equivalence can be assessed using the correlations in Appendix V.

VIII. SUBCOMPONENTS WITHIN THE VALIDITY COMPONENT

The multitrait-multimethod validation strategy suggested by Campbell and Fiske (2) provides information about two kinds of validation: convergent and discriminant. Evidence for convergent validation is provided by correlations between two (or more) methods measuring a single trait. Evidence for discriminant validity comes from two kinds of sources: correlations between different traits measured by similar methods and correlations between different traits measured by different methods.

Four measures were used in applying the Campbell and Fiske multitrait-multimethod validation strategy to the TCHAS. The two measures of anxiety specific to teaching are designated by the letter T; the two measures of general anxiety are designated by the letter G. The TCHAS is referenced by T_1; ASR(2), an anxiety item specific to teaching,is referenced by T_2. ASR items can be found in Appendix X. The relationship between T_1 and T_2 is called the "monotrait-heteromethod" correlation. That is, T_1 and T_2 measure the same trait but by <u>different</u> methods. The Manifest Anxiety Scale is referenced by G_1; and ASR(4), a general anxiety item, is referenced by G_2. The relationship between G_1 and G_2 is also called a monotrait-heteromethod correlation. See Table IX. The convergent and discriminant validation analyses are performed upon the resulting correlations among these four measures by attempting to satisfy sequentially these three criteria.

<u>Criterion one</u> is that the coefficients found in the validity diagonal (the monotrait-heteromethod correlations) should be statistically significant and "sufficiently large to encourage further examination of validity" (2). This criterion refers specifically to the correlation between T_1 and T_2 which is .62 ($p < .001$). Therefore, this data satisfies criterion one, the convergent validation criterion. Without the assurance that the convergent validity values are adequate, there is no point in proceeding further.

<u>Criterion two</u>, one of the two discriminant validity criteria, is that the monotrait-heteromethod validity coefficient should be larger than correlations between measures which share neither trait nor method (heterotrait-heteromethod correlations). Specifically, criterion two requires that the T_1-T_2 monotrait-heteromethod correlation coefficient (.62) be larger than the T_1-G_2 heterotrait-heteromethod correlation coefficient (.31). Criterion two has been satisfied.

Criterion three, the second discriminant validity criterion, is that the T_1-T_2 monotrait-heteromethod correlation coefficient (.62) should be larger than the T_1-G_1 heterotrait-monomethod correlation coefficient (.38). **The criterion has been satisfied.**

In summary, this technique of multitrait-multimethod matrix analysis provides information about two kinds of validation; convergent and discriminant. The convergent validity of the TCHAS(1)-25 has been demonstrated by satisfying criterion one. The discriminant validity of the TCHAS(1)-25 has been shown by satisfying both criteria two and three.

Table IX

Multitrait (T,G) - Multimethod (1,2) Matrix for the Study of the Teaching Anxiety Scale (TCHAS) Validity

		Method 1		Method 2	
		T_1	G_1	T_2	G_2
Method 1	T_1	(.93)			
	G_1	.38*	(.79)		
Method 2	T_2	.62	.30+	(.72)	
	G_2	.31+	.53	.42*	(.43)

Note: ( ) = Monomethod-monotrait correlations. Reliabilities T_1 and G_1 are alpha coefficients of internal consistency; T_2 and G_2 are 5-week test-retest correlations.

// = Monotrait-heteromethod: interpreted as convergent validity due predominantly to trait similarity

* = Heterotrait-monomethod: convergent validity due predominantly to method similarity

\+ = Heterotrait-heteromethod

T = Teaching Specific Anxiety Trait

G = General Anxiety Trait

Method 1 = Self-report questionnaire in which agreement or disagreement with items is recorded by placing a mark in one of several labelled boxes (MAS; TCHAS)

Method 2 = Self-report questionnaire in which agreement or disagreement with items is recorded by placing a vertical mark along a horizontal line, the extremes and midpoint of which are labelled ASR(2), ASR(4).

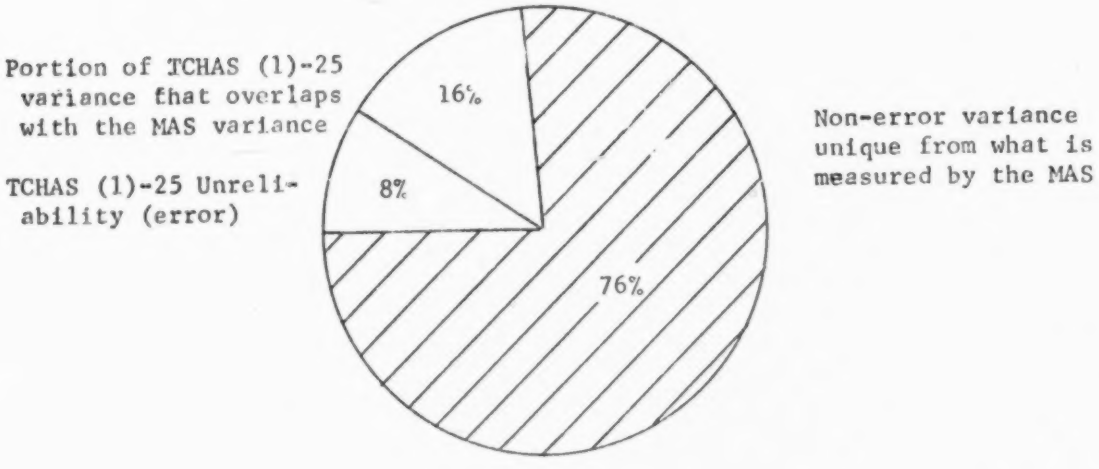
N = 54 (Group A)

IX. UNIQUE NON-ERROR COMPONENT OF THE TEACHING ANXIETY SCALE

A technique suggested by Cronbach (4) provides for an examination of the TCHAS(1)-25 component which is not common to certain other measures of anxiety (the MAS and the TAS). The total variance accounted for by the TCHAS is divided into the following components: (1) the error variance due to unreliability of the TCHAS; (2) the non-error variance that overlaps with the MAS; and (3) the non-error variance that is unique from what is measured by the MAS. The error variance is calculated by subtracting the reliability coefficient (the alpha coefficient of internal consistency in the case of the MAS) from 1.00: 1.00 - .92 = .08. The size of the non-error variance that overlaps with the MAS is calculated by squaring the correlation coefficient between the two measures (the TCHAS and MAS): $(.40)^2 = .16$. The non-error variance that is unique to the TCHAS (in terms of the MAS) is calculated by subtracting the overlap variance from the total non-error variance: .92 - .16 = .76. From this procedure it can be seen that .76 of what the TCHAS measures is measured reliably and is independent of what is being measured by the MAS. See Figure 1 for a pictorial representation of this.

Figure 1

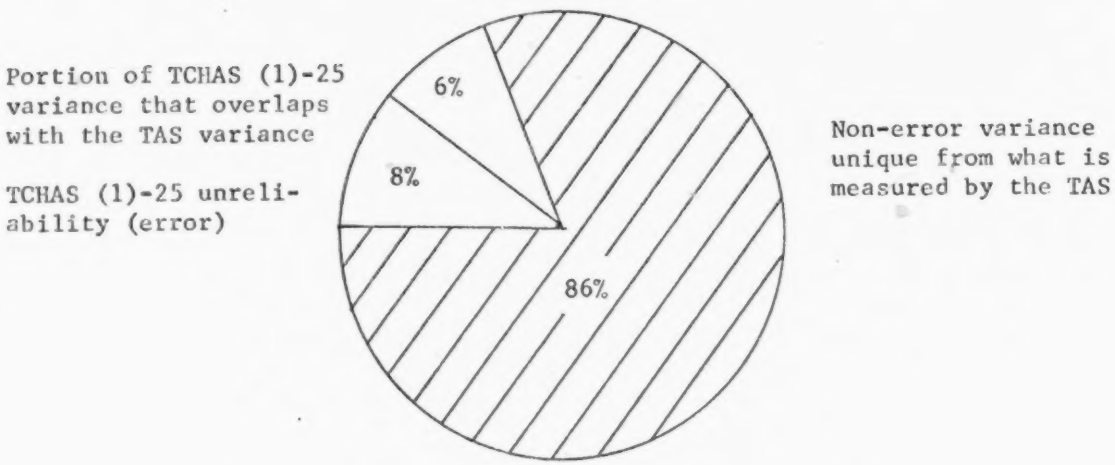
Non-error Component Unique to the TCHAS(1)-25 (with respect to the MAS)


Portion of TCHAS (1)-25 variance that overlaps with the MAS variance
TCHAS (1)-25 Unreliability (error)
16%
8%
76%
Non-error variance unique from what is measured by the MAS

An analogous pictorial representation for the relationship between the TCHAS(1)-25 and the TAS is presented in Figure 2. The correlation between the TCHAS(1)-25 and the TAS is .25. Following the procedure outlined previously, it can be shown that 86% of the TCHAS variance is due to some reliably measured quality independent of both TCHAS(1)-25 unreliability (error) and anxiety as measured by the TAS.

Figure 2

Non-error Component Unique to the TCHAS(1)-25
(with respect to the MAS)


Portion of TCHAS (1)-25 variance that overlaps with the TAS variance
TCHAS (1)-25 unreliability (error)
6%
8%
86%
Non-error variance unique from what is measured by the TAS

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X. ANXIETY SELF REPORT (ASR (1,2,3,4))

Prospective Teacher Questionnaire

Your answers on this questionnaire will be kept strictly confidential. No professor or supervisor will know how you, as an individual, answered these questions.

Name_____

Date_____

Indicate your answers to the following questions by marking a vertical line through the horizontal line at the appropriate point.

Example:

I'm glad I'm in a teacher training program.

never ——— occasionally ——— always

1. I feel anxious about some aspect of teaching

always ——— occasionally ——— never

FINE 0062 9330

ASR(2)

Name_____

Date_____

2. My anxiety about teaching is

_____

extreme moderate insignificant

ASR(3)

Name_____

Date_____

The next two questions refer to anxiety in a more general sense--that is, anxiety other than anxiety about teaching.

3. I am anxious

_____

always occasionally never

ASR(4)

Name_____

Date_____

4. My anxiety (general) is

_____

insignificant moderate extreme

XI. INFORMATION ABOUT THE ANXIETY SELF REPORT (ASR)

Development of the Anxiety Self Report (ASR)

The development of the Anxiety Self Report was financed in part by the Stanford Center for Research and Development in Teaching under U.S. Office of Education contract No. OE 6-10-078. The purpose in constructing this abbreviated scale was to obtain a measure of anxiety about teaching that was more expeditious to administer and, necessarily, less complex than the TCHAS, with which to compare the TCHAS(1)-25 and TCHAS(2)-25. If the validity and reliability data for the ASR were similar to those for the TCHAS(1,2)-25, doubt would be raised regarding the value in administering the longer, more complex and time-consuming TCHAS would have been brought into question.

Description of the Anxiety Self-Report (ASR)

The ASR, a copy of which is found in Appendix X, is composed of four items. Subject response to two items (ASR(1) and ASR(3)) is registered in terms of the frequency of anxiety experienced, and, for the other two (ASR(2) and ASR(4)), the subject responds in terms of the intensity of anxiety felt. The first and second items (ASR(1) and ASR(2)) inquire about teaching-specific anxiety: the third and fourth (ASR(3) and ASR(4)), about general anxiety. The subject responds to each item by placing a vertical mark along a seven inch horizontal line. The extremes of the line for the frequency items are labeled "always" and "never," with "occasionally" as a midpoint. The extremes of the line on which intensity responses are recorded are labeled "extreme" and "insignificant," with "moderate" as a midpoint.

Response Bias and the Anxiety Self Report (ASR)

Two procedures were used to decrease the possible effects of response bias: first, the alternation of the high anxiety end of the line from left to right; and, second, the presentation of each item on a separate page.

Table X

Anxiety Self Report (ASR) Distribution Statistics

	Items About Teaching Anxiety						Items About General Anxiety					
	ASR(1)			ASR(2)			ASR(3)			ASR(4)		
	Mean	Sigma	N	Mean	Sigma	N	Mean	Sigma	N	Mean	Sigma	N
July 1966	4.92	1.73	48	4.25	1.48	48	3.81	1.44	48	3.51	1.41	47
August 1966	4.70	1.43	54	3.93	1.33	54	3.94	1.50	54	3.46	1.42	54

Note: N's vary as a result of missing data. The subjects are from the sample of 55 graduate student secondary preservice intern teachers upon which the TCHAS(1,2) analagous distribution information is calculated.
(Group A)

Sigma = $\sqrt{\frac{\Sigma x^2}{N}}$

Anxiety Self Report (ASR) Scoring Procedures

To score the individual items, divide each line into eight equal segments and number them 1 through 8, with "1" being at the low-anxious end and "8" at the high-anxious end. For ASR(1,2,3), the "8" is at the left side of the paper and the "1" at the right side. For ASR(4) the reverse is true. No attempt has yet been made to calculate an ASR total score. It is suggested that the sum of ASR(1) and ASR(2) might be useful as a measure of teaching anxiety, one that includes both frequency and intensity aspects of anxiety and one which is more stable than either item ASR(1) or ASR(2) alone. ASR(3) and ASR(4) might be summed for the same reasons.

Anxiety Self Report (ASR) Reliability

Internal consistency. It can be noted in Tables XI and XII that the correlations between ASR(1) and ASR(2), both teaching-specific items, and between ASR(3) and ASR(4), both general items, are higher than the correlations of ASR(1) or ASR(2) with either ASR(3) or ASR(4). This pattern makes logical sense.

Table XI

Anxiety Self Report (ASR) Inter-item Correlation Matrix for July 1966

	ASR(2)	ASR(3)	ASR(4)
ASR(1)	.70 (N=48)	.42 (N=48)	.39 (N=47)
ASR(2)		.37 (N=48)	.36 (N=47)
ASR(3)			.63 (N=47)

Note: N's vary as a result of missing data. The subjects are from the sample of 55 graduate student secondary preservice intern teachers upon which the TCHAS(1,2) analogous distribution information is calculated (Group A).

Table XII

Anxiety Self Report (ASR) Inter-item Correlation Matrix for August 1966

	ASR(2)	ASR(3)	ASR(4)
ASR(1)	.76	.43	.34
ASR(2)		.44	.46
ASR(3)			.75

Note: N = 54 of the 55 graduate student secondary education preservice intern teachers upon which the TCHAS(1,2) analogous distribution information is calculated (Group A).

Stability. As can be seen in Table XIII, the five-week ASR(1,2) test-retest reliabilities are roughly comparable to the TCHAS(1,2) eight-week test-retest reliabilities (.60, .61). This information is not, however, correctly interpreted as stability information, for the same reasons mentioned in Section V in the manual.

Table XIII

Anxiety Self Report (ASR) Five-Week Test-Retest Reliabilities

	Test-Retest Correlation	N
ASR(1)	.58	48
ASR(2)	.72	48
ASR(3)	.37	48
ASR(4)	.43	47

Note: N's vary as a result of missing data. The subjects are from the sample of 55 graduate student secondary preservice intern teachers upon which the TCHAS(1,2) analogous distribution information is calculated (Group A).

Anxiety Self Report (ASR) Validity

Validation of the ASR falls under the rubric construct validation for the same reasons as does the TCHAS(see manual text, Section VI). Evidence for the construct validation of the ASR will be presented under the following topics: component validation, internal structure and change over time.

Component Validation. Table XIV gives the correlations between the ASR and other self-report scales of anxiety (the MAS and the TCHAS). The fact that these correlations are both consistently positive and predominantly statistically significant supports the contention that the ASR is measuring some component common to these other measures. The assumption here is that this common component is anxiety.

The approaches of Campbell and Fiske (4) and of Cronbach (7), used earlier to study more precisely what the TCHAS measures, are also appropriate for the ASR.

Table XIV

Correlations Between the ASR and Other Self-report Anxiety Scales (the Teaching Anxiety Scale and the Manifest Anxiety Scale)

	TCHAS(1)-25		MAS	
	TCHAS June '66	TCHAS Aug. '66	MAS June '66	MAS Aug. '66
ASR(1) Aug. 1966	.53	.50	.36	.33
ASR(2) Aug. 1966	.61	.62	.26	.33
ASR(3) Aug. 1966	.35	.46	.45	.57
ASR(4) Aug. 1966	.28	.42	.48	.56

Note: N = 54 (Group A)

Subcomponents within the Shared Component. In fact, the ASR is even more appropriate for analysis by the Campbell and Fiske technique than is the TCHAS, because each of the Anxiety Self Report teaching-specific items has an Anxiety Self Report general anxiety item with which it shares identical method of measurement. Specifically, ASR(1) and ASR(3) are measured by a single method, as are ASR(2) and ASR(4). In the case of the TCHAS and the MAS, the analogous measurement methods were similar but not identical.

Table XV

Multitrait (T,G) - Multimethod (1,2) Matrix for the Study of the Anxiety Self Report Validity

		Method 1		Method 2	
		T_1	G_1	T_2	G_2
Method 1	T_1	(.58)			
	G_1	.43*	(.37)		
Method 2	T_2	.76	.44+	(.72)	
	G_2	.34+	.75	.46*	(.43)

Note: ( ) = Monomethod - monotrait correlations. These reliabilities are all 5-week test-retest correlations.

\ \ = Monotrait - heteromethod correlations, interpreted as convergent due to trait similarity.

* = Heterotrait - monomethod correlations, interpreted as convergence due to method similarity.

\+ = Heterotrait - heteromethod correlations

T = Teaching-specific Anxiety Trait (T_1=ASR(1); T_2=ASR(2))

G = General Anxiety Trait (G_1=ASR(3); G_2=ASR(4))

Method 1 = Method used to measure ASR(1) and ASR(3)

Method 2 = Method used to measure ASR(2) and ASR(4)

N = 54 (Group A)

The ASR(1) - ASR(2) monotrait-heteromethod correlation (.76) is greater than either the ASR(1) - ASR(3) or the ASR(2) - ASR(4) heterotrait-monomethod correlations, .43 and .46, respectively. In addition, the monotrait-heteromethod correlation (.76) is larger than either heterotrait-heteromethod correlation (.34, .44). Therefore, the three criteria suggested by Campbell and Fiske (see Appendix VIII for detail) have been satisfied.

Unique Components. Using the Cronbach technique explained in Appendix IX, it can be shown that the ASR(1) measures reliably some quality that is 47% free of what is measured by the MAS, 39% free of what is measured by the ASR(3),

and 46% different from what is measured by the ASR(4). The ASR(2) measures reliably some quality that is 61% different from what is measured by the MAS, 53% different from what is measured by the ASR(3), and 59% different from what is measured by the ASR(4). The percentage of variance unique to the ASR(1) and ASR(2), with regard to the measures of general anxiety (MAS, ASR(3) and ASR(4)), is small in comparison with the percentages obtained for the TCHAS(1)-25 (Appendix IX). These differences in percent of variance accounted for are due, in large part, to the following reason. The error estimate used for the TCHAS(1)-25 was based upon the alpha coefficient of internal consistency, while those used for the ASR(1) and ASR(2) were based upon five-week test-retest correlation coefficients. The alpha for the TCHAS(1)-25 is a great deal higher than the ASR(1) and ASR(2) five-week test-retest reliability. The size of these differences in percent of variance accounted for can be reduced greatly, either (1) by recalculating the TCHAS(1)-25 percentages using the test-retest correlations (rather than the alphas) as the bases upon which the percentages of error are calculated, or (2) by considering the ASR(1) and ASR(2) as two halves of a single measure of anxiety about teaching, thus permitting the use of the correlation between them as the estimate of ASR(1,2) split-half reliability (one kind of internal consistency). In doing either of these, the magnitude of the advantage of the TCHAS(1)-25 over the ASR(1,2) decreases, though it does not disappear.

It is important at this point to recall that reliability increases as the length of an instrument increases, so it is not surprising that the TCHAS(1)-25, which is 12½ times as long as the combined ASR(1,2), is more reliable than the ASR(1,2).

XII. PRE-TEST INTERRELATIONSHIPS AMONG THE VARIOUS SCORINGS FOR THE TCHAS(1)-29

	TCHAS(1)-25	TCHAS(1)-28	TCHAS(1)-29
TCHAS(1)-24	.996 (.998)	.98 (.99)	.98 (.985)
TCHAS(1)-25		.98 (.98)	.99 (.99)
TCHAS(1)-28			.996 (.998)

Note: The correlations in parentheses are for Group F (N = 30).
The correlations not in parentheses are for Group E (N = 36).

XIII. DESCRIPTION OF SAMPLES

CODE	DESCRIPTION
A	55 Stanford University graduate student intern secondary teachers, 1/3 male and 2/3 female, ranging in age from 23 to 47 years, 1966-67. Data collected by the author during an introductory educational psychology class through the courtesy of Dr. Fred J. McDonald, their professor.
B	384 San Francisco Unified School District newly hired elememtary and secondary teachers, 1/3 male and 2/3 female, 1967. Data collected by Dr. Lester R. Steig, Assistant Superintendent of Schools, during orientation sessions.
C	23 Austin, Texas, inservice public school elementary and junior high school teachers, 1/4 male and 3/4 female, participating in a University of Texas Research and Development Center, "Individualized Teaching for Effective Coping Project"(ITEC), 1969. The TCHAS(1)-28 was sent out by mail in a packet containing ITEC measures to be filled out and returned by mail to the investigator. Data collection made possible Dr. Robert F. Peck, head investigator
D	79 University of Texas undergraduate secondary preservice teachers enrolled in an introductory educational psychology course, 1969. Data obtained through the courtesy of Dr. Edmund Emmer, their professor.
E	36 University of Texas undergraduate and graduate students, (elementary and secondary), 1/4 male and 3/4 female, seeking certification, 1971. Data obtained through the courtesy of Ted Eckman, their instructor.
F	30 University of Texas elementary student teachers (all female) teaching in the Austin Public Schools, 1971.

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